POST CENSUS REGIONAL

HOUSEHOLD TRAVEL SURVEY

Data User's Manual

June 2003

NuStats

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INTRODUCTION

The Post-Census Regional Household Travel Survey was sponsored by the Southern California Association of Governments (SCAG), which is the federally designated metropolitan planning organization for the six-county Los Angeles region of California. In order to document household characteristics and travel behavior, SCAG contracted with NuStats to conduct a large-scale study of regional travel. The study results will be used to update SCAG's travel demand model as well as provide a foundation for long-range transportation planning efforts in the region.

The SCAG region is comprised of six counties: Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. According to the 2000 Census, this region was home to 5,386,491 households. Like many recent surveys, the Post-Census Regional Household Travel Survey relied on the willingness of area households to record all travel and activities made by all household members for an assigned travel period. Households were randomly sampled for inclusion in the study and contacted by telephone for recruitment into the study. Those households that agreed to participate provided information about the household, its members, and all vehicles available to the household. This information was used to create personalized travel diaries, which were mailed to the households 7 to 10 days prior to the assigned travel period. Retrieval of the travel information took place within seven days of the assigned travel period.

In order to meet modeling objectives, the SCAG survey was comprised of several different samples, each designed to provide SCAG with specific types of travel information. These include the base, weekend, Caltrans, RSA, and mode samples. The base, weekend, Caltrans, and RSA samples were designed to be integrated into one data set (the "main" data set), the documentation for which comprises the foundation of this manual. The mode sample augment data users notes are included in that project's final report.

- **Base Sample** of households in the SCAG region across its constituent counties (i.e., Imperial, Los Angeles; Orange; Riverside; San Bernardino; Ventura). This sample was used to collect 24-hour (weekday) diaries.

- **Caltrans Sample**, which comprised the six-county Southern California portion of the California Statewide Household Travel Survey. This sample was drawn from the same sampling frame as the base sample (above) at the same time and was conducted with a field period that overlapped the Regional Travel Survey.

- **Weekend Sample** was designed to measure travel behavior on weekends using a 48-hour diary, whereas the Base, Caltrans, and RSA augment samples of households were designed to measure 24-hour weekday travel behavior. The weekend sample was drawn during the same "pull" as the Base and Caltrans samples. All weekend households recorded travel during a Friday/Saturday or a Sunday/Monday traveling period.

- **Regional Statistical Area (RSA) Augment** was an oversample of subregional geographic areas (RSAs) in the SCAG region with the intent to increase sample at the subregional level.[1] The RSA sample was drawn independently from the Base, Caltrans, and Weekend samples (but from the same sampling frame) during the latter stages of data collection.

- **Mode User Augment** entailed the collection of seven independent samples of specific types of mode users using intercept (or nonprobability) methods. These data were collected to support mode specific statistical models of travel volume and behavior.

A sixth survey component entailed the collection of information using global positioning system (GPS) technology from a sub-sample of households completing the 24-hour travel diaries for the purpose of

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[1] This effort was curtailed during the fieldwork period due to contractual issues, and thus, resulted in far less oversampling at the subregional level than specified in the original sample design.

auditing the self-reported diary data. The results of this survey component and its associated data sets are presented as a separate report.

The definition of a "completed" household for purposes of this study was one in which (1) all household members provided travel data if the household had 1 to 3 persons in it or (2) all but one household member provided travel data if the household had at least 4 persons in it. In addition to all members providing travel data, the contractual requirement of the project also required that all household address be geocoded and 60% of all non-home/non-work addresses also be geocoded. As a result of these high geocoding standards, the main data set contains 16,939 households distributed by county as follows:

TABLE 1: DELIVERED HOUSEHOLDS BY COUNTY OF RESIDENCE

COUNTY	FREQUENCY	PERCENT
Imperial	915	5.4
Los Angeles	7,262	42.9
Orange	2,316	13.7
Riverside	2,341	13.8
San Bernardino	2,172	12.8
Ventura	1,933	11.4
Total	**16,939**	**100.0**

Note: Data are neither weighted nor expanded.

The main data set consists of seven data files, which contain the following types of data:

1. Household File ("*cthh_main*"): Demographic information about the household, including household size, household vehicles, income, typical mode usage, residence type, tenure of home-ownership, length of time lived at current address, language(s) spoken at home, telephone ownership status and documentation of service interruptions, and documentation of various types of equipment available in the home. In addition, the data set flags the county of residence and summaries the number of unlinked trips made by all members of the household, the number of household workers, and the number of household students. *Public release note: Household File has been converted to ESRI Arcview shape file. Each household shape point is located at the centroid of its geocoded census tract.*

2. Person File ("permain"): Demographic information about all household members, regardless of age. This includes age, gender, relationship to the main respondent, ethnicity, disability status, level of educational attainment, employment status, and student status, as well as a summary of all unlinked trips made by each person during the assigned travel period. For each student, the data documents the type of school attended and the number of days the respondent goes to school. For all employed respondents, the file contains documentation of the type of job (business and occupation), the number of days worked and average hours worked each week, typical mode to work and whether a vehicle is required at work, availability and details for employer-provided parking and transit subsidies, and documentation about diary usage and proxy reporting during the retrieval of travel data.

3. Vehicle File ("vehmain"): The year, make, model, and fuel type for each household vehicle is documented in this file, along with the vehicle body and fuel type. The year acquired, ownership status (own vs. lease), and primary driver details are also included.

4. Place File ("placemain"). This file contains one record for each place reported as "visited" by the respondents, beginning with where each respondent was at 3 a.m. at the start of the travel period.

The location at 3 a.m. is referred to as the "Place 1" or anchor record, and serves as the origin for the first reported trip. The place file contains all information as recorded in the travel logs, including reason for travel, travel mode, trip departure and arrival times, and mode-specific information such as household vehicle used, persons accompanying the respondent on each trip, parking cost information, and transit usage data.

5. <u>Unlinked Trip Segment File</u> ("odmain"). The unlinked trip segment file contains the same information as the place file, only in trip segment format rather than "place" format. This means that each record represents one origin-destination pair or trip. The same variables describe the same travel conditions as in the place file (reason for travel, travel mode, trip departure and arrival times, etc.).

6. <u>Linked Trip File</u> ("linkmain"). Using criteria provided by SCAG (see Appendix D), NuStats conducted an initial reduction of the unlinked trip segment file to "link" or join trips into a higher order of purpose. This reduction was preliminary and performed to allow for comparison of the current survey results to previous SCAG surveys. It is anticipated that further reduction will be necessary prior to modeling the linked trip data. This file contains the same travel variables as the place and unlinked trip segment file.

7. <u>Location File</u> ("*ct_main*"): For each address referenced during the course of the study, a unique location number is assigned and placed in the primary file. *Public release note: Location File has been converted to an ESRI Arcview shape file. Each location shape point is located at the centroid of its geocoded census tract.* This location number links that demographic record to the corresponding location record contained in this file. These links include:
    a. Household File: Household Address (hhaddr)
    b. Person File: Main Work Address (w1addr), Address of Second Job (w2addr), School Address (s1addr).
    c. Place File: Each place visited over the course of the assigned travel period, including the Place 1 anchor (locno).
    d. Unlinked Trip Segment File: The origin and destination for each unlinked trip segment (olocno and dlocno).
    e. Linked Trip File: The origin and destination for each linked trip (olocno and dlocno).

DESCRIPTION OF THE DATA FILES

The SCAG survey data are contained in seven data files: household, person, vehicle, place, unlinked trip, linked trip, and locations. The household, person, vehicle, place, unlinked trip, and linked trip files are arranged hierarchically with key field indicators to allow linking the information in the files together. The location file contains the addresses for all places visited, as well as the home, work, and school address information obtained during the recruitment interview. A complete listing of all variables and associated codes are contained in the Appendices to this report.

RELATIONSHIP AMONG THE FILES

Table 2 shows the key data fields that link the data files. There are two identifying relationships among the data files. The first links the demographic and travel data while the other links the address data. For the non-address data, each household was assigned a unique "sample number" that is contained in all but the location file and is used to link that data. The "location number" links all the address references to the location file.

TABLE 2: DATA SET RELATIONSHIPS

Data File	Description	# Records	Key Record Reference Field	Location Reference Fields
Household	1 record for each household	16,939	SAMPNO	HHADDR
Person	1 record for each household member	40,376	SAMPNO PERNO	W1_ADDR W2_ADDR S1_ADDR
Vehicle	1 record for each household vehicle (so no records for any 0-vehicle households)	30,274	SAMPNO VEHNO	
Place	1 record for each place visited during the travel period	190,169	SAMPNO PERNO DAYNO PLANO VEHNO	LOCNO
Unlinked Trips	1 record for each unlinked trip recorded during the travel period	144,800	SAMPNO PERNO DAYNO PLANO VEHNO	LOCNO
Linked Trips	1 record for each linked trip recorded during the travel period	134,247	SAMPNO PERNO DAYNO PLANO VEHNO	LOCNO
Location	1 record for each address visited on the travel day as well as the home, work, and school addresses	100,313		LOCNO

The file relationships are shown graphically in Figures 1 and 2.

FIGURE 1 – REFERENCE FIELDS: DATA RECORDS

```
                    ┌─────────────────┐
                    │ Household File  │
                    │ SAMPN           │
                    └─────────────────┘
                       │           │
           ┌───────────────┐   ┌───────────────┐
           │ Person File   │   │ Vehicle File  │
           │ SAMPN         │   │ SAMPN         │
           │ PERNO         │   │ VEHNO         │
           └───────────────┘   └───────────────┘
                   │                   │
           ┌───────────────┐   ┌───────────────┐
           │ Trip File     │   │ Trip File     │
           │ SAMPN         │   │ SAMPN         │
           │ PERNO         │   │ VEHNO         │
           │ DAYNO         │   │               │
           └───────────────┘   └───────────────┘
```
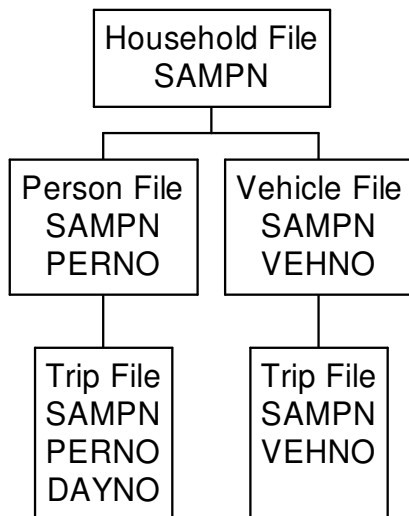
FIGURE 2 – REFERENCE FIELDS: LOCATION RECORDS

```
                    ┌─────────────────┐
                    │ Location File   │
                    │ LOCNO           │
                    └─────────────────┘
           ┌─────────────┼───────────────────────┐
  ┌─────────────────┐ ┌─────────────────┐ ┌─────────────────────────────┐
  │ Household File  │ │ Person File     │ │ Place, OD Main, Link Main Files │
  │ HHADDR          │ │ W1_ADDR         │ │ LOCNO                       │
  │                 │ │ W2_ADDR         │ │                             │
  │                 │ │ S1_ADDR         │ │                             │
  └─────────────────┘ └─────────────────┘ └─────────────────────────────┘
```
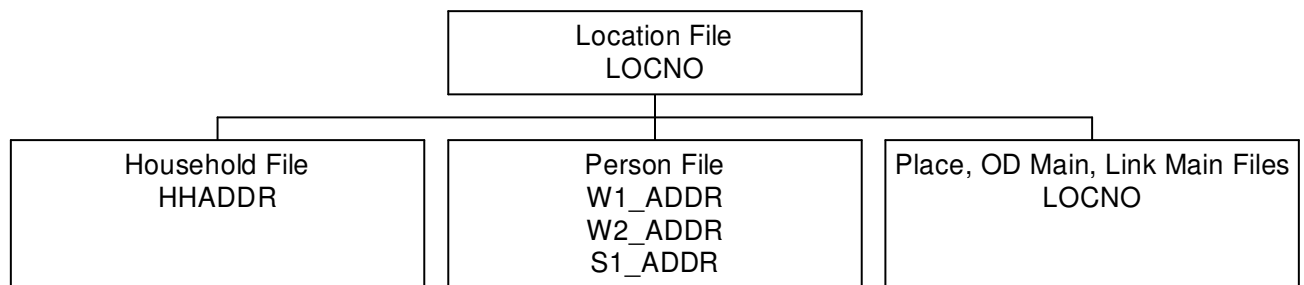
COMPUTED AND ADMINISTRATIVE VARIABLES

Most of the data contained in the data sets came directly from the respondent during the course of the recruitment and retrieval interviews. There were, however, some computed variables added to the data set during processing for analysis purposes. In addition, the files contain some administrative variables to aid in the interpretation of the survey results. These include the following:

HOUSEHOLD FILE:

FINWGT	Final Data Weight
EXPWGT	Final Expansion Weight
SOURCE	Variable that documents the sample type (base, weekend, Caltrans, or RSA sample)
REGION	Household county of residence
RSA	Household RSA of residence
HHTRIPSD1	Sum of the number of trips made by the household on Day 1 found in the place, unlinked trip segment and linked trip files. If the household reported zero trips, there will only be a Place 1 record for each household member in the place file.
HHTRIPSD2	Sum of the number of trips made by the household on Day 2 found in the place, unlinked trip segment and linked trip files (valid only if the household was from the weekend sample).
NWORK	Number of household workers (summed from the person file for all cases with EMPLY=1 for a given sample number)
NSTUD	Number of household students (summed from the person file for all case with STUD=1 for a given sample number).
MTRIPS	Flag to indicate that the household was a partial complete (criteria included household size>3 and only 1 household member did not report data.
GPS	Administrative variable to indicate that the household has GPS data
PHASE	Data collection phase
DAY1	Day of week HHTRIPSD1 occurred
DAY2	Day of week HHTRIPSD2 occurred

PERSON FILE:

PTRIPSD1	Sum of the number of trips made by the respondent on Day 1 found in the place, unlinked trip segment and linked trip files. If the household reported zero trips, there will only be a Place 1 record for the household member in the place file.
PTRIPSD2	Sum of the number of trips made by the household on Day 2 found in the place, unlinked trip segment and linked trip files (valid only if the household was from the weekend sample).

PLACE, UNLINKED TRIP, LINKED TRIP FILES:

TRPDUR	Trip duration, calculated as the arrival time at place N minus the departure time from place N-1, in minutes.
ACTDUR	Activity duration, calculated as the departure time from place N minus the arrival time at that same place N, in minutes.

SPDFLAG   Flag to indicate the outcome of the speed check comparing reported travel times with the distance traveled.

LOCATION TRIP FILE:

TRACT   Census tract associated with the latitude and longitude corresponding to the reported address.

XCORD   Longitude coordinate for that address

YCORD   Latitude coordinate for that address

AV_STATU   Flag to indicate the outcome of the geocoding process

AV_ADD   Address corresponding to the latitude/longitude coordinates

GEOCITY   City corresponding to the latitude/longitude coordinates

GEOZIP   Zip code corresponding to the latitude/longitude coordinates.

QCFLAG   Flag to indicate the outcome of the quality control process

APPENDICES

APPENDIX A: DATA CODE BOOK

HOUSEHOLD FILE (N=16,506 HOUSEHOLDS)

```
SAMPN       Sample Number (unique identifier for each household)

SOURCE      Sample Type
            Value    Label
                1    Main (1-day/24-hour travel)
                2    Weekend (2-day/48-hour travel on Fri/Sat and Sun/Mon only)
                4    RSA - (1-day/24-hour travel geographic augment)
                5    Caltrans (1-day/24-hour travel from the statewide Caltrans survey)

RECTYPE     Record Type
            Value    Label
                1    Household

REGION      Home county
            Value    Label
                1    Imperial County
                2    Los Angeles County
                3    Orange County
                4    Riverside County
                5    San Bernardino County
                6    Ventura County

RSA         SCAG RSA

HHADDR      Household Address Code (links to address details in location file)

PHONE       Phone number

HHSIZE      Number of household members

NO_PHLNS    Number of household telephone lines

FMLIN       Fax or modem (if no_phlns>1)

NOPHN       Without phone service in past 12 months (if income<$50k or refused)
            Value    Label
                1    Yes
                2    No
                8    Don't know
                9    Refused

LENGTH      How long without service (if nophn=1)
            Value    Label
                1    Less than 1 month
                2    1 month to less than 1 year
                3    1 year or longer
                8    DK
```

```
MODE1      Mode Used in Past 7 days by any household member (response 1)
           Value    Label
             0      None
             1      Park-n-Ride to Metrorail
             2      Park-n-Ride to Express Bus
             3      Metrolink
             4      Toll Road
             5      Metrorail (Red, Green, and Blue)
             6      Express Bus
             7      Local or Community Bus
             9      DK/RF

MODE2      Mode Used in Past 7 days by any household member (response 2)
           Value    Label
             0      None
             1      Park-n-Ride to Metrorail
             2      Park-n-Ride to Express Bus
             3      Metrolink
             4      Toll Road
             5      Metrorail (Red, Green, and Blue)
             6      Express Bus
             7      Local or Community Bus
             9      DK/RF

MODE3      Mode Used in Past 7 days by any household member (response 3)
           Value    Label
             0      None
             1      Park-n-Ride to Metrorail
             2      Park-n-Ride to Express Bus
             3      Metrolink
             4      Toll Road
             5      Metrorail (Red, Green, and Blue)
             6      Express Bus
             7      Local or Community Bus
             9      DK/RF

MODE4      Mode Used in Past 7 days by any household member (response 4)
           Value    Label
             0      None
             1      Park-n-Ride to Metrorail
             2      Park-n-Ride to Express Bus
             3      Metrolink
             4      Toll Road
             5      Metrorail (Red, Green, and Blue)
             6      Express Bus
             7      Local or Community Bus
             9      DK/RF

TOTVEH     Number of household vehicles

VISIT      Overnight visitors (flag for whether there were overnight visitors)
           Value    Label
             1      Yes
             2      No
             9      DK/RF

VISNO      How many visitors  (if VISIT=yes)
           Value    Label
             9      DK/RF
```

```
BIKES      Number of bicycles
           Value    Label
             98     Don't know
             99     Refused


RESTYPE    Type of dwelling unit
           Value    Label
              1     Unattached Single Family Home
              2     Duplex
              3     Apartment
              4     Condominium or townhouse
              5     Mobile home or trailer
              6     Group quarters (dorms, barracks, etc. )
              7     Other (specify)
              9     DK/RF


RESTYPOT   Other type of dwelling (if residence type=other, specify)


OWN        Owner/Renter Status
           Value    Label
              1     Own/buying
              2     Rent
              7     Other
              8     DK
              9     RF


O_OWN      Other Owner/Renter Status (if own=other, specify)


HLIVE      Months live at home location
           Value    Label
             98     Don't know
             99     Refused


LANG1      Language(s) spoken in the home  (response 1)
           Value    Label
              1     English
              2     Spanish
              3     Tagalog
              4     Chinese (Mandarin/Cantonese)
              5     Japanese
              6     Vietnamese
              7     Cambodian
              8     Korean
             97     Other
             98     Don't Know
             99     Refused


LANG2      Language(s) spoken in the home  (response 2)
           Value    Label
              1     English
              2     Spanish
              3     Tagalog
              4     Chinese (Mandarin/Cantonese)
              5     Japanese
              6     Vietnamese
              7     Cambodian
              8     Korean
             97     Other
```

```
LANG3      Language(s) spoken in the home  (response 3)
           Value   Label
              1    English
              2    Spanish
              3    Tagalog
              4    Chinese (Mandarin/Cantonese)
              5    Japanese
              6    Vietnamese
              7    Cambodian
              8    Korean
             97    Other

OTHLANG    Other language  (if lang=other, specify)

INCAT      HH income Category
           Value   Label
              1    Above 50K
              2    Below 50K
              9    DK/RF

INCOME     Total 2000 annual household income
           Value   Label
              1    Less than $10,000
              2    $10,000 to $24,999
              3    $25,000 to $34,999
              4    $35,000 to $49,999
              5    $50,000 to $74,999
              6    $75,000 to $99,999
              7    $100,000 to $149,999
              8    $150,000 or more
              9    DK/RF

EQUIP1     Equipment used in home (response 1)
           Value   Label
              0    None
              1    A portable cellular telephone
              2    A fax machine
              3    A desktop or laptop computer
              4    Web TV
              5    Answering Machine/Voice Mail
              6    Caller ID
              7    Call Blocking
              8    Internet Service
              9    RF

EQUIP2     Equipment used in home (response 2)
           Value   Label
              1    A portable cellular telephone
              2    A fax machine
              3    A desktop or laptop computer
              4    Web TV
              5    Answering Machine/Voice Mail
              6    Caller ID
              7    Call Blocking
              8    Internet Service
              9    RF
```

```
EQUIP3      Equipment used in home (response 3)
            Value    Label
                1    A portable cellular telephone
                2    A fax machine
                3    A desktop or laptop computer
                4    Web TV
                5    Answering Machine/Voice Mail
                6    Caller ID
                7    Call Blocking
                8    Internet Service
                9    RF

EQUIP4      Equipment used in home (response 4)
            Value    Label
                1    A portable cellular telephone
                2    A fax machine
                3    A desktop or laptop computer
                4    Web TV
                5    Answering Machine/Voice Mail
                6    Caller ID
                7    Call Blocking
                8    Internet Service
                9    RF

EQUIP5      Equipment used in home (response 5)
            Value    Label
                1    A portable cellular telephone
                2    A fax machine
                3    A desktop or laptop computer
                4    Web TV
                5    Answering Machine/Voice Mail
                6    Caller ID
                7    Call Blocking
                8    Internet Service
                9    RF

EQUIP6      Equipment used in home (response 6)
            Value    Label
                1    A portable cellular telephone
                2    A fax machine
                3    A desktop or laptop computer
                4    Web TV
                5    Answering Machine/Voice Mail
                6    Caller ID
                7    Call Blocking
                8    Internet Service
                9    RF

EQUIP7      Equipment used in home (response 7)
            Value    Label
                1    A portable cellular telephone
                2    A fax machine
                3    A desktop or laptop computer
                4    Web TV
                5    Answering Machine/Voice Mail
                6    Caller ID
                7    Call Blocking
                8    Internet Service
                9    RF
```

```
EQUIP8     Equipment used in home (response 8)
           Value    Label
               1    A portable cellular telephone
               2    A fax machine
               3    A desktop or laptop computer
               4    Web TV
               5    Answering Machine/Voice Mail
               6    Caller ID
               7    Call Blocking
               8    Internet Service
               9    RF


GPS        GPS Household   (GPS data available for this household)
           Value    Label
               1    Yes
               2    No
PHASE      Travel Period
           Value    Label
               1    Spring 2001
               2    Fall 2001
               3    Spring 2002


DAY1       Travel Day of Week (Day 1)
           Value    Label
               1    Sunday
               2    Monday
               3    Tuesday
               4    Wednesday
               5    Thursday
               6    Friday


DAY2       Travel Day of Week (Day 2) (Weekend households only)
           Value    Label
               2    Monday
               7    Saturday


HTRIPSD1   Household Trips Day 1

HTRIPSD2   Household Trips Day 2   (weekend households only)

NWORK      Number of HH workers (summed from person file if emply=1)

NSTUD      Number of HH students (summed from person file if student=1)

MTRIPS     Household is Valid Partial
               (household size is 4+ and 1 person didn't report travel)
           Value    Label
               1    Yes


FINWGT     Final Household Weight

EXPWGT      Final Expansion Weight
```

PERSON FILE (N=40,376 PERSONS)

```
RECTYPE    Record Type
           Value    Label
              2     Person

SAMPN      HH ID Number

PERNO      Person ID Number

W1_ADDR    Work1 Reference Number
W2_ADDR    Work2 Reference Number
S1_ADDR    School1 Reference Number

AGE        Person X -Age
           Value    Label
             98     98+ years
             99     DK/RF

GENDER     Person X -Gender
           Value    Label
              1     Male
              2     Female
              9     Refused

LIC        Person X -Valid drivers license  (if age>15)
           Value    Label
              1     Yes
              2     No
              8     Don't know
              9     Refused

RESP       Flag indicating main household respondent
           Value    Label
              1     Yes
              2     No

RELATION   Relationship to Respondent
           Value    Label
              1     SELF
              2     Spouse/partner
              3     Son/Daughter
              4     Mother/Father/Mother In-law/Father In-law
              5     Other relative
              6     Live-in Help
              7     Not Related
              9     DK/RF

EMPLY      Employment Status (if age>15)
           Value    Label
              1     Yes
              2     No
              9     DK/RF

PRIMACT    Life Status  (if age>15 and EMPLY=2, 9)
           Value    Label
              1     Retired
              2     Disability status
              3     Homemaker
              4     Unemployed
              7     Other
              9     DK/RF

O_PRMACT   Other life status
```

```
ETHN      Person X –Ethnicity
          Value    Label
             1     White/Not Hispanic
             2     Hispanic
             3     African American
             4     Asian/Pacific Islander
             7     Other
             9     DK/RF

O_ETHN    Other Ethnicity

DISAB     Disability status
          Value    Label
             1     Yes
             2     No
             9     DK/RF

DISTY     Type of Disability (if DISAB=1)
          Value    Label
             1     None
             2     Difficulty standing, walking, or climbing stairs
             3     Visually impaired/blind
             4     Hearing impaired/deaf
             5     Wheelchair
             6     Require cane/walker
             7     Other (specify)
             9     DK/RF

OTHDIS    Other disability

EDUCATE   Person X –Education
          Value    Label
             1     11th grade or less
             2     High school graduate
             3     2 years of college/Associates Degree
             4     4 years of college/Bachelors degree
             5     Post–Graduate
             7     Other
             9     DK/RF

O_EDUCAT  Other Person X –Education

STUDENT   Student status
          Value    Label
             1     Yes
             2     No
             8     Don't know
             9     Refused

SCHOOL    School Type of Main School  (if student=1)
          Value    Label
             1     Daycare/Pre-School
             2     K – 6th Grade
             3     7th – 12th Grade
             4     Trade/Technical
             5     College Undergraduate Studies
             6     College Graduate Studies
             7     Other
             9     DK/RF

O_SCHOOL  Other school
```

```
SLOC1     School 1 Location
          Value   Label
              1     HOME
              2     School location outside the home
              9     DK/RF


SCHDAYS   Days to school
          Value   Label
              8     DK
              9     RF


JOBS      Number of jobs  (if emply=1)
          Value   Label
              3     3+
              9     DK/RF


BUSTYPE   Business Type
          Value   Label
             11     Agriculture/Forestry/Fishing
             21     Mining
             22     Utilities
             23     Construction
             31     Manufacturing – Nondurable goods
             32     Manufacturing – Durable goods
             41     Wholesale trade
             44     Retail trade
             48     Transportation and Warehousing
             51     Information
             52     Finance or Insurance
             53     Real Estate
             54     Professional, Scientific, and Technical services
             55     Management of companies and enterprises
             56     Administrative and support services
             61     Educational Services
             62     Healthcare and social assistance
             71     Arts, entertainment, and recreation
             72     Accommodations and food services
             81     Other Services (excluding public administration)
             92     Public Administration
             97     Other
             98     Don't Know
             99     Refused


O_BTYPE   Other Business Type


OCCUP     Occupation Description
          Value   Label
              1     Executive, Admin, or Managerial
              2     Professional specialty
              3     Technicians or related support
              4     Sales
              5     Administrative support, clerical
              6     Private Household
              7     Protective Services
              8     Service, except protective and household
              9     Farming, Forestry, or Fishing
             10     Precision, Production, Craft, or Repair
             11     Machine operator, assembler, or inspector
             12     Transportation, or material moving
             13     Handler, equipment cleaner, helper, or laborer
             97     Other
             98     Don't Know
             99     Refused


O_OCCUP   Other Occupation Type
```

```
TTL_HRS    Total number of hours worked per week at main job
           Value    Label
             97     97+ hours
             98     Don't know
             99     Refused

FTPT1      Full-time/Part-time Status
           Value    Label
              1     Full-time
              2     Part-time
              9     DK/RF

HRVR1      Work Hours Fixed
           Value    Label
              1     Fixed
              2     Varies
              9     DK/RF

WHYV1      Describes Situation (if hrvr1=2)
           Value    Label
              1     Hours vary at my choice
              2     Hours allowed to vary within fixed limits
              3     Fixed starting time, but variable ending time
              4     Fixed hours, but different hours on different days
              5     Variable depending on work
              7     Other
              9     DK/RF

O_WHYV1    Other Describes Situation

JOBLOC     Job Location
           Value    Label
              1     Home
              2     Fixed Address
              3     No fixed address (e.g. traveling salesman, repairman, etc.)
              9     DK/RF

MODE1      Usual mode to main job   (if jobloc>1)
           Value    Label
              1     Drive alone
              2     Auto, Van shared ride - 2+ persons
              3     Public transit
              4     Walk
              5     Bike
              9     DK/RF

VEHREQ     Employer require HH Veh (if jobloc>1)
           Value    Label
              1     Yes
              2     No
              9     Refused

FREEPRK    Free Parking  (if jobloc>1)
           Value    Label
              1     Yes
              2     No
              9     Refused

EMPPAY1    Employer Paid Parking  (if freeprk=2)
           Value    Label
              1     Yes
              2     No
              9     DK/RF
```

```
PRKP1       Amount Personally Paid for Parking  (if emppay1=2)
            Value    Label
              .00    Free
       999999.00     DK/RF


PARU1       Parking Unit  (if prkp1>0 and <999999)
            Value    Label
                1    Daily
                2    Weekly
                3    Monthly
                4    Annualy
                7    Other
                9    DK/RF


O_PARU1     Other Parking Unit


EMPPAY2     Employee use paid parking (if emppay1=1)
            Value    Label
                1    Yes
                2    No
                9    DK/RF


EMPT1       Employer Paid Transit (if jobloc>1)
            Value    Label
                1    Yes
                2    No
                9    DK/RF


EMPT2       Employee use paid transit (if empt1=1)
            Value    Label
                1    Yes
                2    No
                9    DK/RF


BUSPAY      Transit Cost  (if mode1=3)
            Value    Label
              .00    Free
         9999.00     DK/RF


BPAYUNIT    Transit pass cost unit (if buspay>0 and <9999)
            Value    Label
                0    Per Ride
                1    Daily
                2    Weekly
                3    Monthly
                4    Annual
                9    DK/RF
```

```
BUSTYPE2   Business Type – 2nd job (if jobs>1 and <9)
           Value   Label
            11     Agriculture/Forestry/Fishing
            21     Mining
            22     Utilities
            23     Construction
            31     Manufacturing – Nondurable goods
            32     Manufacturing – Durable goods
            41     Wholesale trade
            44     Retail trade
            48     Transportation and Warehousing
            51     Information
            52     Finance or Insurance
            53     Real Estate
            54     Professional, Scientific, and Technical services
            55     Management of companies and enterprises
            56     Administrative and support services
            61     Educational Services
            62     Healthcare and social assistance
            71     Arts, entertainment, and recreation
            72     Accommodations and food services
            81     Other Services (excluding public administration)
            92     Public Administration
            97     Other
            98     Don't Know
            99     Refused

O_BTYPE2   Other Business Type – 2nd job

OCCUP2     Occupation Description – 2nd job
           Value   Label
             1     Executive, Admin, or Managerial
             2     Professional specialty
             3     Technicians or related support
             4     Sales
             5     Administrative support, clerical
             6     Private Household
             7     Protective Services
             8     Service, except protective and household
             9     Farming, Forestry, or Fishing
            10     Precision, Production, Craft, or Repair
            11     Machine operator, assembler, or inspector
            12     Transportation, or material moving
            13     Handler, equipment cleaner, helper, or laborer
            97     Other
            98     Don't Know
            99     Refused

O_OCCUP2   Other Occupation Description – 2nd job

TTL_HRS2   Total number of hours worked per week at second job
           Value   Label
            97     97+ hours
            98     Don't know
            99     Refused

JOBLOC2    Job Location
           Value   Label
             1     Home
             2     Fixed Address
             3     No fixed address (e.g. traveling salesman, repairman, etc.)
             9     DK/RF


PTRIPSD1   Person total number of trips – DAY 1

PTRIPSD2   Person total number of trips – DAY 2
```

```
NOGO        Did respondent travel on travel day?
            Value    Label
               1     No
               2     Yes
               3     Trips not collected – valid partial

WHY         Reason for no trips

USEDIARY    Diary use
            Value    Label
               1     Yes
               2     No
               9     DK/RF

D2USEDIA    Diary use–Day 2
            Value    Label
               1     Yes
               2     No
               9     DK/RF

PROXY       Household Spokesperson (Proxy number)

D2PROXY     Household Spokesperson (Proxy number)–Day 2
```

VEHICLE FILE (N=30,274 VEHICLES)

```
RECTYPE    Record Type
           Value    Label
               3    Vehicle


SAMPN      Sample Number (unique identifier for each household)

VEHNO      Vehicle Number

MAKE       Vehicle Number
           Value    Label
               1    Acura
               2    Audi
               3    BMW
               4    Buick
               5    Cadillac
               6    Chevrolet
               7    Chrysler
               8    Dodge
               9    Ford
              10    Geo
              11    GMC
              12    Harley Davidson
              13    Honda
              14    Hyundai
              15    Infiniti
              16    Isuzu
              17    Jaguar
              18    Jeep
              19    Kawasaki
              20    Kia
              21    Lexus
              22    Lincoln
              23    Mazda
              24    Mercury
              25    Mercedes
              26    Mitsubishi
              27    Nissan
              28    Oldsmobile
              29    Plymouth
              30    Pontiac
              31    Porsche
              32    Range Rover
              33    Saab
              34    Saturn
              35    Subaru
              36    Suzuki
              37    Toyota
              38    Volkswagen
              39    Volvo
              40    Yamaha
              41    Daewoo
              97    Other
              98    DON'T KNOW
              99    REFUSED

O_MAKE     Other Make

MODEL      Vehicle X -Model
```

```
YEAR       Vehicle X –Year
           Value    Label
            8888    Don't know
            9999    Refused

BTYPE      Vehicle X –Body Type
           Value    Label
               1    Auto
               2    Van
               3    RV
               4    Sport Utility Vehicle
               5    Pick-up Truck
               6    Other Truck
               7    Motorcycle/Moped
              97    Other
              99    DK/RF

OTHBTYP    Other body type

FUEL       Vehicle X –Fuel type
           Value    Label
               1    Gasoline
               2    Diesel
               3    Electric
               7    Other
               8    DK
               9    RF

OTHFUEL    Other fuel type

OWN        Owned or Leased
           Value    Label
               1    Owned by a household member
               2    Owned by a person not in your household
               3    Leased
               8    DK
               9    RF

LEASE      Who Leases the Vehicle (If own=3)
           Value    Label
               1    A household member
               2    An employer
               7    Someone else, SPECIFY
               8    Don't Know

OTHLEAS    Other lease

DRIVE      Person who Usually Drives the Vehicle

ACQUIRE    Year acquired
           Value    Label
            8888    Don't know
            9999    Refused
```

PLACE FILE (N=190,169 PLACES)

```
RECTYPE    Record Type
           Value    Label
               4    Trip


SAMPN      HH ID Number


PERNO      Person ID Number


DAYNO      Day number


PLANO      Place number


LOCNO      Location Reference number


TRP_ACT1   Primary Trip Purpose
           Value    Label
               1    Change mode of transportation
               2    Pick up someone or get picked up
               3    Drop off someone or get dropped off
               4    ATM, buy gas, quick stop for coffee, newspaper, etc.
               5    Shopping
               6    Banking, post office, pay bills
               7    Work (include regular scheduled volunteer work)
               8    Work-related (sales call, meeting, errand, etc.)
               9    School (attending classes)
              10    Other school activities (sports, extra-curricular)
              11    Childcare, daycare, after school care
              12    Eat meal (restaurant, drive through, take out)
              13    Medical
              14    Fitness activity (playing sports, gym, bike ride)
              15    Recreational (vacation, camping, etc.)
              16    Entertainment (watching sports, movies, dance, bar, etc.)
              17    Visit friends/relatives
              18    Community meetings, political/civic event, public hearing
              19    Occasional volunteer work
              20    Church, temple, religious meeting
              21    With another person at their activity out of home
              22    Other personal (specify)
              23    Working at home (related to main or second job)
              24    Other at home activities
              97    Other activity
              99    DK/RF


TRP_ACT2   Secondary Trip Purpose
           Value    Label
               0    No other activities
               1    Change mode of transportation
               2    Pick up someone or get picked up
               3    Drop off someone or get dropped off
               4    ATM, buy gas, quick stop for coffee, newspaper, etc.
               5    Shopping
               6    Banking, post office, pay bills
               7    Work (include regular scheduled volunteer work)
               8    Work-related (sales call, meeting, errand, etc.)
               9    School (attending classes)
              10    Other school activities (sports, extra-curricular)
              11    Childcare, daycare, after school care
              12    Eat meal (restaurant, drive through, take out)
              13    Medical
              14    Fitness activity (playing sports, gym, bike ride)
              15    Recreational (vacation, camping, etc.)
              16    Entertainment (watching sports, movies, dance, bar, etc.)
```

```
          17    Visit friends/relatives
          18    Community meetings, political/civic event, public hearing
          19    Occasional volunteer work
          20    Church, temple, religious meeting
          21    With another person at their activity out of home
          22    Other personal (specify)
          23    Working at home (related to main or second job)
          24    Other at home activities
          97    Other activity
          99    DK/RF

TRP_ACT3  Third Trip Purpose
          Value   Label
            1     Change mode of transportation
            2     Pick up someone or get picked up
            3     Drop off someone or get dropped off
            4     ATM, buy gas, quick stop for coffee, newspaper, etc.
            5     Shopping
            6     Banking, post office, pay bills
            7     Work (include regular scheduled volunteer work)
            8     Work-related (sales call, meeting, errand, etc.)
            9     School (attending classes)
          10    Other school activities (sports, extra-curricular)
          11    Childcare, daycare, after school care
          12    Eat meal (restaurant, drive through, take out)
          13    Medical
          14    Fitness activity (playing sports, gym, bike ride)
          15    Recreational (vacation, camping, etc.)
          16    Entertainment (watching sports, movies, dance, bar, etc.)
          17    Visit friends/relatives
          18    Community meetings, political/civic event, public hearing
          19    Occasional volunteer work
          20    Church, temple, religious meeting
          21    With another person at their activity out of home
          22    Other personal (specify)
          23    Working at home (related to main or second job)
          24    Other at home activities
          97    Other activity
          99    DK/RF

TRP_ACT4  Fourth Trip Purpose
          Value   Label
            1     Change mode of transportation
            2     Pick up someone or get picked up
            3     Drop off someone or get dropped off
            4     ATM, buy gas, quick stop for coffee, newspaper, etc.
            5     Shopping
            6     Banking, post office, pay bills
            7     Work (include regular scheduled volunteer work)
            8     Work-related (sales call, meeting, errand, etc.)
            9     School (atending classes)
          10    Other school activities (sports, extra-curricular)
          11    Childcare, daycare, after school care
          12    Eat meal (restaurant, drive through, take out)
          13    Medical
          14    Fitness activity (playing sports, gym, bike ride)
          15    Recreational (vacation, camping, etc.)
          16    Entertainment (watching sports, movies, dance, bar, etc.)
          17    Visit friends/relatives
          18    Community meetings, political/civic event, public hearing
          19    Occasional volunteer work
          20    Church, temple, religious meeting
          21    With another person at their activity out of home
          22    Other personal (specify)
          23    Working at home (related to main or second job)
          24    Other at home activities
          97    Other activity
```

```
                99    DK/RF

O_ACT1    Other Primary Trip Purpose

O_ACT2    Other Secondary Trip Purpose

PTYPE     Where they went
          Value    Label
             1     Home
             2     Primary school location
             3     Second school location
             4     Primary work place
             5     Second work place
             7     Other Place
             9     Out of the travel study area

MODE      Mode of trip (if plano>1)
          Value    Label
             1     Walk
             2     Bicycle
             3     Drove
             4     Passenger in car/truck/van
             5     Local bus or community bus
             6     Express bus
             7     Metro Blue Line
             8     Metro Green Line
             9     Metro Red Line
            10     Commuter Rail (Metrolink, Amtrak)
            11     Dial-A-Ride/Paratransit
            12     School Bus
            13     Greyhound Bus
            14     Taxi/Shuttle Bus/Limousine
            15     Motorcycle/Moped
            97     Other
            99     DK/RF

OTHMODE   Other mode type

VEHAVAIL  Household Vehicle Available (asked for all non-transit modes)
          Value    Label
             1     Yes
             2     No
             8     Don't know
             9     Refused

TRANSRTE  Route Used  (if transit trip)

VEHNO     Vehicle Used  (if auto trip)
          Value    Label
            97     Non-household vehicle
            99     DK/RF

PARTY     Members in Traveling Party  (if travel by auto)
          Value    Label
            99     DK/RF

HH_MEM    Number of household members on trip
          Value    Label
            99     DK/RF

PERTP     Person Numbers

NONHH     Non-HH members on trip
          Value    Label
            99     DK/RF
```

```
WLKBKDIS   Walking/Biking Distance (in blocks for walk and bike trips)
           Value    Label
            999     DK/RF


PRK_COST   Parking Cost  (auto trips only)
           Value    Label
            .00     Free
       999999.00    DK/RF


PRK_UNIT   Parking Cost Unit  (auto trips only)
           Value    Label
             1      Hourly
             2      Daily
             3      Weekly
             4      Monthly
             5      Quarterly
             6      Annually
             7      None
             8      Other
             9      DK/RF


PRK_MTHD   Parking Pay Method  (auto trips only)
           Value    Label
             0      Did not use any method to pay
             1      Cash
             2      Credit Card
             3      Payroll Deduction/Employee Pass
             4      Validated Parking Ticket
             7      Other
             9      DK/RF


OTHPKMET   Other Parking Pay Method  (auto trips only)


FARE       Fare Paid  (transit trip only)
           Value    Label
            .00     Free Ride
       999999.00    DK/RF


FAREMTHD   Fare Type  (transit trip only)
           Value    Label
             1      Cash
             2      Credit Card
             3      Bus/Train Pass
             4      Transfer
             7      Other
             9      DK/RF


OTHFARE    Other Fare type (transit trips only)

BOARD      Boarding Location (transit trips only)
```

```
ACCESS     Access to bus/rail stop  (transit trips only)
           Value    Label
               1    Walk
               2    Drove car and parked
               3    Was dropped off
               4    Rode bike
               5    Transferred from another bus or train
               7    Other
               9    DK/RF


O_ACCESS  Other Access to bus/rail stop (transit trips only)


ALGHT     Exit Location (transit trips only)


EGRESS    Egress from bus/rail stop (transit trips only)
           Value    Label
               1    Walk
               2    Picked up car and drove
               3    Was picked up
               4    Rode bike
               5    Transferred to another bus or train
               7    Other
               9    DK/RF


O_EGRESS  Other Egress from bus/rail stop (transit trips only)


SYSTM     System Used (transit trips only)


ARRIVE    Arrival Time


DEPART    Departure Time


TRPDUR    Trip Duration


ACTDUR    Activity Duration


SPDFLAG   Speed Check Flag
           Value    Label
               0    No flag violation
               1    Respondent error, miles=0, different place but same address
               2    Add 5 minutes, and passes speed check
               3    Add 10 minutes, and passes speed check (geocoding verified)
               4    Add 15 minutes, and passes speed check (geocoding verified)
               5    Unresolved speed violation
               6    Trip too slow, subtract 1 to 5 minutes and at normal speed
               7    Subtracted 5 minutes, still too slow (geocoding verified)
```

LOCATION FILE (N=100,313 ADDRESSES)

```
RECTYPE   Record Type
          Value   Label
             5    Location


LOCNO     Location Number (links to address fields in hh, per, place, and trip files)

LOCTYPE   Location Type
          Value   Label
             1    Home
             2    School
             3    Work
             4    Work 2
             5    Trip


LOCATION  Location Name (as provided by respondent)
ADDRESS   Location Address  (as provided by respondent)
CITY      Location City  (as provided by respondent)
XSTREET   Location Cross Streets  (as provided by respondent)
LANDMARK  Landmark (as provided by respondent)
COUNTY    Location County  (as provided by respondent)
STATE     Location State (as provided by respondent)


ZIP       Location Zip Code  (as provided by respondent)
          Value   Label
          99999   DK/RF


TRACT     Census Tract (based on latitude/longitude coordinates)
XCORD     Longitude  coordinate
YCORD     Latitude coordinate


AV_STATU  Geocoding Status
          Value   Label
             M    Matched
             O    Out of Area – has no latitude/longitude coordinates
             U    Unmatched – has no latitude/longitude coordinates
             Y    City Centroid
             Z    Zip Code Centroid


AV_ADD    Arc View Address (address output by Arc View)
AV_ZONE   Arc View Zone (zone/zip code output by Arc View – not always applicable)
GEOCITY   Geocoded City associated with latitude/longitude coordinates
GEOZIP    Geocoded Zip Code (associated with latitude/longitude coordinates)


QCFLAG    Quality Control Flag
          Value   Label
             1    Given City matches GEOCITY and Given Zip matches GEOZIP
             2    Given Zip matches GEOZIP
             3    Given City matches GEOCITY for non-metropolitan areas
             4    Visually Point Verified (or verified unmatched, out of area)
```

APPENDIX C: TRIP REDUCTION CRITERIA

The Post-Census Regional Household Travel Survey contains travel data in three files: the place file, the unlinked trip segment file, and the linked trip file. As detailed in the text of the report, the place file contains one record for each place or location visited by the respondents during the assigned travel period. It includes a "Place 1 anchor" to start each day, which also serves as the origin for each trip.

The unlinked trip segment file was created by combining the origin and destination for each trip into a single record. Each record thus includes the activities at both the origin and destination of each trip, as well as the location numbers and other trip-related data.

The linked trip file was created using the following steps:

1. From the place-based file, each household-person-day trip chain was reviewed to determine if there were any destinations in which the primary trip purpose was to "serve passenger" (i.e. pick up or drop off). These places were flagged to be set aside.

2. The resultant places were then converted into trips (with origin and destination characteristics on the same line) to identify "loop trips", or trips that had identical origins and destinations. An example would be if someone traveled from home to pick up a household member and then returned home. In these cases, the "serve passenger" segment of the trip was re-inserted into the trip chain since the stated purpose of the trip was to pick up a household member. In all other cases, the strategic purpose of the trip was not to "serve passenger" but instead some other final destination/activity. An example of this is when a household member begins his or her trip chain at home, picks someone up, and then continues to work. Without the linking process, this chain would result in two trips – home to pick up, pick up to work; a summary of these trips might read home-based other and non-home based work. In reality, the strategic purpose of the trip is home to work. Summarizing the three trip segments into two by removing the "serve passenger" segment facilitates identification of the true trip purpose.

3. The next step in linking was to determine those trip segments in which the reason for travel was to "change mode". These segments were removed, and the mode of the resultant linked trip was based on the following hierarchy:

   1. Public bus/public transportation
   2. Driver trips
   3. Passenger
   4. Motorcycle/moped
   5. Taxi/shuttle/limo
   6. School bus
   7. Bike
   8. Walk
   9. Other
   10. Refused

   As a result of this hierarchy, if any of the modes in the continuum were "public bus/public transportation" the final trip mode would be defined as a public transport trip. If no mode were public transport, all modes would be scanned again to determine if any were driver trips. This process would continue through the hierarchy. An example would be a trip from home to a park-n-ride lot, defined as a "driver" trip, the next segment might be a public transportation trip, and the last segment might be a "walk" trip to work. In our process, this trip chain would be modified to result in a home to work trip with mode defined as "public transport".

4. All reported activities at both the origins and destinations were then recoded into the following intermediate typology:
    1. Home
    2. Working at Home
    3. Work
    4. Work-Related
    5. Attend School
    6. Other School Activities
    7. Daycare
    8. Quick Stop
    9. Shopping
    10. Visiting
    11. Personal Business
    12. Eat Out
    13. Recreational
    14. Civic/Religious
    15. Other

5. An origin-destination matrix was used to determine summary trip categories based on origin and destination characteristics as follows:

    • HBW (Home-Based Work)
    • HBWR (Home-Based Work-Related)
    • HBSCH (Home-Based School)
    • HBO (Home-Based Other)
    • HBSHOP (Home-Based Shopping)
    • NHBW (Non Home-Based Work)
    • NHBO (Non Home-Based Other)

APPENDIX D: PUBLIC DATA SET CREATION

The Travel and Congestion Survey was publicly funded and is therefore a public resource. However, SCAG is also obligated to protect the privacy of the survey respondents. Therefore, the results of the survey have been modified to assure to prevent identification of any given household or person. Specifically the following revisions apply:

• Household: Omits address and telephone number, omits textual references to ethnicity or disability status.
• Person: Omits name and textual references to other school or work sites.
• Vehicle: Omits model name
• Place: Omits textual references to places visited
• Location: Coordinates of all locations--including households, schools and work--have been recoded to the nearest census tract

Revisions to Public version of Location File

Steps:

1. Set the following fields as visible on locmain.shp:

RECTYPE
LOCTYPE
AV_STATU
RSA
TRACT
FIPS
ILOCNO

2. Export the shape file as dbf

3. Calculate keyfield in newly created shape file as
    [Fips].right(3).asnumber * 1000000 + ([Tract].asnumber * 100)

4. In census tract centroid cover, calculate keyfield fipstract as
    [county].asnumber * 1000000 + ([name].asnumber * 100)
    (where county = 2 digit fips code and name = tract with decimal for split designations)

5. Add x and y field to label points:
    Calc x as [shape].returncenter.getx
    Calc y as [shape].returncenter.gety

6. Join to census tract label points

7. Add as event theme

8. Convert to shape file ../shapes/ct_main.shp

Revisions to Public Version of Household File

Steps

Export hh_main.shp as dbf after removing fields:
*   Sampn (as opposed to isampn)
*   Address, city, landmark
*   Phone

Add fipstract
Join to ct_main by locno and calc fipstract = ct_main:fips_tract
Join to Tr06_d00u and calc x and y variables
Add as event theme
Convert to shape file cthh_main.shp

Note: Seven Households are outside of SCAG region: Cause, the county fips code from the location file presumed to be incorrect.

Revisions to Public version of Access Database

Export the following tables from Working.mdb:
Linkmain
ODmain
Permain
Placmain
Vehmain

Delete variables with potential for revealing household identity:

Household:
O_LANG
O_OWN

Person:
O_ETHN
OTHDIS
O_PRIMACT
O_EDUCAT
O_SCHOOL
O_BTYPE
O_OCCUP
O_PARU1
O_WHYV1
O_OCCUP2
O_BTYPE2

Vehicle:
O_MAKE
MODEL
OTHBTYP
OTHLEAS
OTHFUEL

Placmain
O_ACT1
OTHMODE
OTHPKMET
OTHFARE
O_ACCESS
O_EGRESS

Linkmain and ODMain
O_OACT1
O_OACT2
O_DACT1
O_DACT2
OTHMODE

OTHPKMET
OTHFARE
O_ACCESS
O_EGRESS